

**REMARKS**

Claims 1-40 and 44-60 are pending in this application. By this Amendment, claims 41-43 are cancelled without prejudice or disclaimer, claims 1, 6-8, 13-14, 47, 51, 53-54 and 56 are amended and claims 57-60 are added. Support for new claims 57-60 can be found in the specification including the original claims and figures, for example, see pages 8-27. Reconsideration in view of the above amendments and following remarks is respectfully requested.

Entry of the amended claims is proper under 37 C.F.R. §1.116 since the amendments: (1) place the application in condition for allowance (for the reasons discussed herein); (2) do not raise any new issues requiring further search and/or consideration (since the amendments amplify issues previously discussed throughout prosecution without incorporating additional subject matter); (3) satisfy a requirement of form asserted in the previous Office Action; and/or (4) place the application in better form for appeal (if necessary). Entry is thus requested.

Applicants gratefully acknowledge the telephone conference with Examiner Chang on June 4, 2002. As discussed with the Examiner, Applicants hereby elect Species II directed to a four lens system and thus requests examination of claims 19-25 and 38-40 with traverse. Applicants respectfully submit that Species II, which is drawn to a four lens system is also generic to Species III, as designated by the Examiner, which is drawn to a five lens system. Applicants submit that a five lens system would not be a burdensome search when a four lens system is examined. Further, Applicants respectfully submit that Species I, directed to a three

lens system, would also be properly searched with a four lens system. As such, Applicants respectfully traverse the election requirement.

I. Misnumbered claims

The Office Action states that misnumbered claims 38-53 have been renumbered as 41-56. Applicants respectfully submit that claims 38-40 in the Amendment filed on February 4, 2002, are identical to the claims 38-40 filed on May 18, 2001, and were submitted for the Examiner's convenience, as noted in the Remarks, page 9 and pages 12-13 of the February 4, 2002 Amendment. As such, Applicants have cancelled renumbered claims 41-43 and refer to the renumbered claims 44-56 as designated by the Office Action on April 1, 2002.

II. Objections

The Office Action objects to claims 45 and 50. Applicants respectfully submit that claims 45 and 50 are supported by the specification, specifically see page 9, lines 4-6 which clearly states that the first lens is fabricated by a plastic molding process. Withdrawal of the objection is respectfully requested.

III. 35 U.S.C. §112

The Office Action rejects claims 45 and 50-51 under 35 U.S.C. §112, first paragraph. Similar to the statement mentioned above with respect to the objections, Applicants respectfully

submit that claims 45 and 50 were properly supported by the specification on page 9, lines 4-16. Withdrawal of the rejection of claims 45 and 50-51 under 35 U.S.C. §112 is respectfully requested.

The Office Action also rejects claims 47, 51 and 53-54 under 35 U.S.C. §112, second paragraph. Applicants respectfully submit that the above amendments obviate the grounds for the rejection of claims 47, 51 and 53. Claim 54 appears to have been improperly rejected. Withdrawal of the rejection of claims 47, 51, 53 and 54 under 35 U.S.C. §112 is respectfully requested.

#### IV. Double Patenting

The Office Action states that if claims 2-3 and 9-10 should be found allowable, claims 6-7 and 13-14 would be objected to. Applicants respectfully submit that the above amendments obviate the grounds for this objection. Withdrawal of the objection is respectfully requested.

#### V. 35 U.S.C. §102(b)

The Office Action rejects claims 1, 3-4, 7-8, 10-11, 14, 46-48, 52-54 and 55-56 under 35 U.S.C. §102(b) over Tezuka et al. (U.S. Patent No. 5,170,207). Since Tezuka et al. fail to disclose or suggest all the features of the claims, the rejection is respectfully traversed.

Applicants respectfully submit that Tezuka et al. appear to disclose a projection lens system with a plurality of lens elements including a Fresnel lens element having negative

dispersion characteristics and an aspheric surface action that can be added by varying their pitches. However, Tezuka et al. fail to disclose or suggest, as recited in claims 1, 8 and 55, at least the feature of at least one diffractive optical element formed on an aspherical surface.

Rather, Tezuka et al. disclose an aspheric surface action for correcting various aberrations rather than diffractive optical elements formed on an aspherical surface.

The Office Action states that Tezuka et al. teach a projection lens having a plurality of refractive lenses including a Fresnel lens that may be formed on an aspherical surface. However, Tezuka et al. disclose in column 7, lines 46-58, that a Fresnel lens can be converted into either a spherical type or an aspherical type simply by varying the pitch distribution of the diffraction gradient because there is no appreciable difference between the spherical and aspherical surfaces in terms of the difficulty with which it is fabricated. It does not disclose or suggest forming a Fresnel lens on an aspherical surface but rather that an aspherical type Fresnel lens can be formed to correct certain aberrations. Furthermore, with respect to Figure 3, the Fresnel lens 9 appears to be formed on either a flat or spherical surface.

For at least the reasons set forth above, Applicants respectfully submit that claims 1, 8 and 55 are allowable. Claims 3-4, 7, and 46-48 depend from claim 1, claims 10-11, 14, and 52-54 depend from claim 8, and 56 is depends from claim 55, and are allowable for at least the same reasons, as well as their added features and the combinations thereof. Withdrawal of the rejection of claims 1, 3-4, 7-8, 10-11, 14, 46-48, 52-54, and 55-56 under 35 U.S.C. §102(b) is respectfully requested.

VI. 35 U.S.C. §103(a)A. Claims 2, 6, 9 and 13

The Office Action rejects claims 2, 6, 9 and 13 under 35 U.S.C. §103(a) over Tezuka et al. in view of Chen et al. (U.S. Patent No. 5,969,864). Since the references, alone or in combination, fail to disclose or suggest all the features of the claims, the rejection is respectfully traversed.

Applicants respectfully submit that for the reasons discussed above with respect to claims 1 and 8, Tezuka et al. fail to disclose or suggest all the features of the claims. Chen et al. fail to cure the deficiencies of Tezuka et al. Applicants respectfully submit that Chen et al. appear to disclose an optical element formed on a planar surface, as illustrated in Figures 1, 3, 4 and 5. However, Chen et al. fail to disclose or suggest, as recited in claims 1 and 8 similar to Tezuka et al., at least the features of at least one diffractive optical element formed on an aspherical surface.

For at least the reasons set forth above with respect to claims 1 and 8, Applicants respectfully submit that claims 2 and 6, which depend from claim 1 and claims 9 and 13, which depend from claim 8, are allowable for at least the same reasons, as well as their added features and the combinations thereof. Withdrawal of the rejection of claims 2, 6, 9 and 13 under 35 U.S.C. §103(a) is respectfully requested.

B. Claims 44 and 49

The Office Action rejects claims 44 and 49 under 35 U.S.C. §103(a) over Tezuka et al. in view of Nakagiri (U.S. Patent No. 5,555,479). Since the references, alone or in combination, fail to disclose or suggest all the features of the claims, the rejection is respectfully traversed.

Applicants respectfully submit that Tezuka et al. fail to disclose or suggest all the features of the claims, for at least the reasons set forth above with respect to claims 1 and 8. Nakagiri fails to cure these deficiencies. Applicants respectfully submit that Nakagiri appears to disclose a projection lens system with a diffractive optical element separate from an aspherical lens. See Figures 1-4 of Nakagiri. However, Nakagiri fails to disclose or suggest, as recited in claims 1 and 8, at least the feature of at least one diffractive optical element formed on an aspherical surface.

For at least the reasons set forth above, Applicants respectfully submit that claims 44 and 49 are allowable for at least the same reasons as claims 1 and 8, respectively, as well as their added features and the combinations thereof. Withdrawal of the rejection of claims 44 and 49 under 35 U.S.C. §103(a) is respectfully requested.

VII. New Claims 57-60

By this Amendment, claims 57-60 are added to the application. New claims 57-60 broadly recite the features of the preferred embodiment(s). It is respectfully submitted that the new claims are allowable over the references of record for at least the reasons discussed above in connection with claims 1-40 and 44-56.

**VIII. Election/Restriction**

As discussed on June 4, 2002, the Examiner stated that claims 1-14 and 44-56 are generic and the species remaining are Species I (claims 15-18), Species II (claims 19-25 and 38-43) and Species III (claims 26-37). As a result of the telephone conference, Applicants respectfully elect Species II, directed to claims 19-25 and 38-43 (claims 41-43 have been cancelled without prejudice or disclaimer). As a result of this election, Applicants respectfully submit that all pending claims are in condition for allowance and if the pending claims are not in condition for allowance, request a non-final Office Action as claims 19-25 and 38-40 have not previously been addressed. Furthermore, Applicants respectfully submit rejoinder of all pending claims if generic claims 1-14 and 44-56 are found to be allowable.

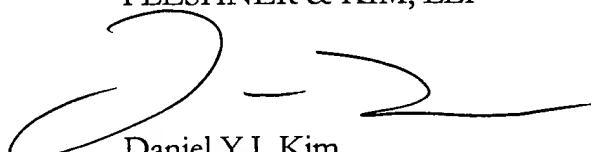
**IX. Conclusion**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, Laura L. Lee at the telephone number listed below. Favorable consideration and prompt allowance are earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
FLESHNER & KIM, LLP



Daniel Y.J. Kim  
Registration No. 36,186  
Laura L. Lee  
Registration No. 48,752

P.O. Box 221200  
Chantilly, VA 20153-1200  
703 502-9440

**Date: July 1, 2002**

DYK\LLI.dep

**Clean Set of Amended Claims**

1. (Twice Amended) A projection lens system, comprising:
  - a plurality of lenses, wherein at least one lens of the plurality of lenses comprises an aspherical surface; and
  - at least one diffractive optical element formed on the aspherical surface.
6. (Amended) The projection lens system according to claim 1, wherein one surface of the diffractive optical element includes a pitch of grooves having a rotation symmetry on a spherical surface, wherein the pitch of the grooves changes as it goes from the center into the peripheral of the one surface.
7. (Amended) The projection lens system according to claim 1, wherein one surface of the diffractive optical element includes a pitch of grooves having a rotation symmetry on a plane surface, wherein the pitch of the grooves changes as it goes from the center into the peripheral of the one surface.
8. (Twice Amended) A projection lens system, comprising:
  - a plurality of refractive lenses, wherein at least one lens comprises an aspherical surface; and

at least one diffractive optical element formed on the aspherical surface to correct chromatic aberrations at on axis and off axis.

13. (Amended) The projection lens system according to claim 8, wherein one surface of the diffractive optical element includes a pitch of grooves having a rotation symmetry on a spherical surface, wherein the pitch of the grooves changes as it goes from the center into the peripheral of the one surface.

14. (Amended) The projection lens system according to claim 8, wherein one surface of the diffractive optical element includes a pitch of grooves having a rotation symmetry on a plane surface, wherein the pitch of the grooves changes as it goes from the center into the peripheral of the one surface.

47. (Amended) The projection lens system according to claim 1, wherein at least one of the plurality of lenses comprises a glass material for at least half of the refractive power in the projection lens system.

51. (Amended) The projection lens system according to claim 50, wherein at least one of the plurality of lenses comprises a glass material for at least half of the refractive power in the projection lens system.

53. (Amended) The projection lens system according to claim 8, wherein at least one of the plurality of refractive lenses comprises a glass material for at least half of the refractive power in the projection lens system.

54. (Amended) The projection lens system according to claim 8, wherein at least one of the plurality of refractive lenses comprises a lens for correcting both a field curvature and an astigmatism.

56. (Amended) The projection lens system according to claim 55, wherein the lenses are refractive lenses and at least one the aspherical surface corrects chromatic aberrations at on axis and off axis.

**B. Please add new claims 57-60 as follows:**

57. (New) The projection lens system according to claim 1, wherein one surface of the diffractive optical element includes grooves, a pitch of each groove being smaller as it goes from the center to the peripheral.

58. (New) The projection lens system according to claim 1, wherein one surface of the diffractive optical element includes grooves, a pitch of each groove being larger as it goes from the center to the peripheral.

59. (New) The projection lens system according to claim 8, wherein one surface of the diffractive optical element includes grooves, a pitch of each groove being smaller as it goes from the center to the peripheral.

60. (New) The projection lens system according to claim 8, wherein one surface of the diffractive optical element includes grooves, a pitch of each groove being larger as it goes from the center to the peripheral.